DEPARTMENT OF ENVIRONMENTAL QUALITY
PERMITTING and COMPLIANCE DIVISION
MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM (MPDES)

Statement of Basis (SOB)

PERMITTEE: Custer Area/Yellowstone County Water and Sewer District

PERMIT NO.: MT 0031526

RECEIVING WATER: Yellowstone River

FACILITY INFORMATION

Name: Custer Lagoon

Location: ½ mile east of 8th Street; ¼ mile north of Frontage Road

Contacts: Don Seader, President
(406) 856-4248

P.O. Box 29
Custer, MT 59024

FEE INFORMATION

Number of Outfalls: 1 (For Fee Determination Only)

Type of Outfall: 001 Treated Wastewater

I. Permit Status

This facility was previously owned and operated as a Yellowstone County Rural Special Improvement District (RSID #515). The District obtained a National Pollutant Discharge Elimination System permit (MT0020486) from the Environmental Protection Agency on May 6, 1974 to discharge to the Yellowstone River. However, since the discharge never reached the river, as described in the next paragraph, the permit was not renewed.

A recent Preliminary Engineering Report (PER) showed that the lagoon cells leak excessively. Calculations by Montana Engineering and Administration, P.C. (ME&A) show approximately 84% of the wastewater entering the lagoon cells leaks through the bottom of the cells to groundwater. The Custer Area/Yellowstone County Water and Sewer District (Custer lagoon) was recently formed to upgrade the facility to a three-cell facultative lagoon that will discharge to the Yellowstone River. Information about the facility was submitted by ME&A on July 11 and 26, 2006 and final DEQ 1 and EPA 2A applications were submitted on August 16, 2006. The applications were determined to be complete on August 28, 2006. Custer is an unincorporated town.

The proposed facility is not considered a new or increased source because the activity occurred before April 29, 1993 [ARM 17.30.702(18)]. Since the proposed facility is not considered a new source it is not subject to the nonsignificance criteria in ARM 17.30.715(1).

II. Facility Information

A. Facility Description

The original facility consisted of a collection system, lift station and a two-cell facultative lagoon. The upgraded facility will consist of the collection system, lift station, three two-acre facultative lagoon cells and ultra-violet (UV) disinfection. The discharge pipe will go under the I-94 freeway and discharge to the Yellowstone River in the SE ¼ of Section 36, T5N, R34E. The upgraded facility will serve approximately 145 people. The design flow of the upgraded facility will be 0.028 million gallons per day (mgd) or 0.043 cubic feet per second (cfs).

The present lagoon system is not discharging to surface water. Construction is planned so one or two new cells will be constructed where the secondary pond is located. Once complete, wastewater will be diverted into the new cells while the third cell is constructed. There will be no discharge of wastewater to surface water during construction. Plans and specifications will be submitted to the Department for review in the spring of 2007 and construction is anticipated in the fall of 2007 (personal communication with Crystal Bennett on November 17, 2006).

Table 1 summarizes the current design criteria for the proposed facility.

Table 1. Design Criteria Summary for Proposed Custer Lagoon

Facility Description: Three-cell facultative lagoon system with UV disinfection.	
Construction Date: 1968	Modification Date: 2007
Design Year: 1967	(left blank)
Design Population: 215	Population Served:145
Design Flow Average (mgd) 0.028	Design Flow, Peak (mgd): 0.056
Primary Cells: 2	Secondary Cells: 1
Minimum Detention Time (System) (days): 130	
Design BOD_5 Removal (%): 85	Design Load (lb/day) 43
Design SS Removal (%): 65	Design Load (lb/day): 47
Collection System: separate	
SSO Events (Y/N): No	Number:
Bypass Events (Y/N): No	Number:
Inflow Flow (mgd): none	Source:
Disinfection: yes	Type: UV
Discharge Method: continuous	
Effluent Flow Primary Device: Parshall flume	
Recording Device: totalizer	
Sludge Storage: none	
Sludge Disposal: land apply	EPA :Permit: MTG650047

Data from ME&A (October 3, 2006).

B. Effluent Characteristics

There is no effluent data available for the facility. A sample of the wastewater in the existing lagoon was sampled for Total Kjeldahl Nitrogen (35.3 mg/L) and total phosphorus (4.85 mg/L) on December 18. 2003. The Town of Jordan has a facility similar to the Custer lagoon. Based on recent effluent monitoring data from the Town of Jordan and professional judgment by ME&A, effluent characteristics for the Custer lagoon are estimated and listed in Table 2.

Table 2. Estimated Effluent Characteristics

Parameter (mg/L unless noted otherwise)	Maximum Daily Value	Average Daily Value
Flow (mgd)	0.056	0.028
Biological Oxygen Demand (BOD_5)	65	45
Total Suspended Solids (TSS)	100	65
Temperature (winter) (º F)	50	40
Temperature (summer) (º F)	85	75
pH (s.u.)	9.0	7.6
Fecal Coliform (#/100 ml)	400	200
Ammonia	15	5
Nitrate + Nitrite, as N	35	24
Total Phosphorus, as P	10	5

III. Proposed Technology-Based Effluent Limitations (TBEL)

The Board of Environmental Review has adopted by reference 40 CFR 133 which set minimum treatment requirements for secondary treatment or equivalent for publicly owned treatment works (POTW) [ARM 17.30.1209]. Secondary treatment is defined in terms of effluent quality as measured by BOD_5, TSS, percent removal of BOD_5 and TSS, and pH. National secondary treatment requirements are described in 40 CFR 133 and incorporated into all municipal permits.

The Secondary treatment requirement may be modified on a case-by-case basis for facilities that are eligible for treatment equivalent to secondary (TES) treatment [40 CFR 133.101 (g)] for BOD_5, TSS and percent removal. To determine if a facility is eligible for TES the facility must meet the requirements of 40 CFR 133.101(g), summarized as follows:

1) The 95th percentile of the 30-day BOD_5 and TSS concentrations in a minimum 2-year period, excluding upsets, bypasses, operational errors and unusual conditions [40 CFR 133.101(f)] exceed the minimum levels established for secondary treatment requirement;
2) The treatment works utilize a trickling filter or waste stabilization pond; and,
3) The treatment works utilizes biological treatment that consistently achieves a 30-day average of at least 65 percent removal [40 CFR 133.101(k)].

No data is available to determine if the Custer lagoon is eligible for TES effluent limitations. Upgraded facultative lagoon facilities are expected to meet secondary treatment limitations for BOD_5 and TSS [ARM 17.30.1209(2)]. Secondary treatment effluent limitations instead of TES limitations are also appropriate for TSS because the Yellowstone River is impaired for suspended solids on the 1996 TMDL list.

<u>Technology-Based Effluent Limitations – Basis for Mass-Based Calculations</u>

ARM 17.30.1345(8) requires that all effluent limitations must be expressed in terms of mass.

Load (lbs/day) = Design Flow (MGD) x Concentration (mg/L) x Conversion Factor (8.34)

BOD_5:

30-d Load = 0.028 MGD x 30 mg/L x 8.34 (lbs)(L)/(mg)(gal) = 7.0 lbs/day

7-d Load = 0.028 MGD x 45 mg/L x 8.34 (lbs)(L)/(mg)(gal) = 10.5 lbs/day

TSS:

30-d Load = 0.028 MGD x 30 mg/L x 8.34 (lbs)(L)/(mg)(gal) = 7.0 lbs/day

7-d Load = 0.028 MGD x 45 mg/L x 8.34 (lbs)(L)/(mg)(gal) = 10.5 lbs/day

Table 3. Technology-based Effluent Limitations

Parameter	Concentration		Load		Rationale
	Weekly Average[1] (mg/L)	**Monthly Average** [1] (mg/L)	**Weekly Average Load** (lbs/day)	**Monthly Average Load** (lbs/day)	
BOD_5	45	30	10.5	7.0	40 CFR133.102(a)(1)(2)
TSS	45	30	10.5	7.0	40 CFR 133.102(b)(1)(2)
pH (s.u.)	Within the range of 6.0 to 9.0				40 CFR 133.102 (c)
BOD_5 Removal Efficiency (%)	85 %				40 CFR 133.102(a)(4)(iii)
TSS Removal Efficiency (%)	85 %				40 CFR 133.102(b)(3)

[1] See Part V of the permit for explanation of terms.

Nondegradation

The provisions of ARM 17.30.701, *et seq*. (Nondegradation of Water Quality) apply to new or increased sources of pollution [ARM 17.30.702(18)]. Under ARM 17.30.702 the discharge from the Custer lagoon is considered to be an existing source that will not result in a new or increased discharge because the discharge was approved prior to April 29, 1993. Nondegradation threshold load allocations satisfying the Montana Nondegradation Rules (ARM 17.30 subchapter 7) are calculated in this permit because they were not calculated in the previous permit. BOD_5 and TSS nondegradation load allocations are derived using the equation below, facility design criteria and the permit limitations in effect prior to April 29, 1993. Since no limitations for TSS were in effect on April 29, 1993,

National Secondary Treatment Standards [40 CFR 133.102(b)] will be applied to the discharge as the most stringent standard.

Load (lbs/day) = Design flow (mgd) x 7-day or 30-day average concentration limit (mg/l) x 8.34 (lbs)(L)/(mg)(gal)

BOD_5 Nondegradation Threshold Load Allocation:

7-day BOD_5 = 0.028 x 75 x 8.34 = 17.5 lbs BOD_5/day
30-day BOD_5 = 0.028 x 50 x 8.34 = 11.7 lbs BOD_5/day

TSS Nondegradation Threshold Load Allocation:

7-day TSS = 0.028 x 45 x 8.34 = 10.5 lbs TSS/day
30-day TSS = 0.028 x 30 x 8.34 = 7.0 lbs TSS/day

Total nitrogen and total phosphorus nondegradation load allocations are derived using the following equation:

Load (lbs/day) = (Facility Design or Equivalent Population) x (Pounds/Capita/Day Contribution)

Total Nitrogen Nondegradation Threshold Load Allocation:

Equivalent design population (1970) = 215
Pounds Total N as N/Capita/Day = 0.028
Total Nitrogen Load Allocation:
(215 x 0.028) = 6.0 lbs TN as N /day

Total Phosphorus Nondegradation Threshold Load Allocation:

Pounds Total P/Capita/Day = 0.007
Total Phosphorus Load Allocation:
(215 x 0.007) = 1.5 lbs TP as P /day

There are no data available to compare allocated loads to actual loads discharged. Self-monitoring for the applicable parameters will be required in this permit cycle to support such comparisons in the next permit cycle. A summary of the nondegradation threshold load allocations for the Custer lagoon is presented in Table 4. Any increase above this amount is subject to the provisions of the Nondegradation Policy (75-5-303, MCA).

Table 4. Nondegradation Load Allocations

Parameter	Allocated Load (lbs/day)	
	7-Day	30-Day
BOD_5	17.5	11.7
TSS	10.5	7.0
Total Nitrogen, as N	NA	6.0
Total Phosphorus, as P	NA	1.5

IV. Proposed Water Quality-Based Effluent Limitations (WQBEL)

A. Scope and Authority

The Montana Water Quality Act (Act) states that a permit may only be issued if the Department finds that the issuance or continuance of the permit will not result in pollution of any state waters [75-5-401(2), Montana Code Annotated (MCA)]. Montana water quality standards at ARM 17.30.637(2) require that no wastes may be discharged such that the waste either alone or in combination with other wastes will violate or can reasonably be expected to violate any standard. ARM 17.30.1344(1) adopts by reference 40 CFR 122.44 which states that MPDES permits shall include limitations on all pollutants which will cause, or have a reasonable potential to cause an excursion of any water quality standard, including narrative standards. The purpose of this section is to provide a basis and rationale for establishing effluent limitations for the Custer lagoon based on Montana water quality standards that will protect designated uses of the receiving stream.

The Act authorizes the issuance of point source discharge permits on a listed water body pending completion of a TMDL provided that: 1) the discharge is in compliance with the provisions of 75-5-303 (Nondegradation Policy), MCA; 2) the discharge will not cause a decline in water quality for the parameters for which the water body is listed; and, 3) the minimum treatment requirements under 75-5-703(10), MCA are met.

B. Receiving Water

The Custer lagoon will discharge to the Yellowstone River. The water use classification for the Yellowstone River at the point of discharge is B-3 [ARM 17.30.611(1)(c)]. Waters classified B-3 are to be maintained suitable for drinking, culinary and food processing purposes, after conventional treatment; bathing, swimming and recreation; growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply. Based on information received from Michael Vaughn, Fish, Wildlife and Parks Field Technician on September 21, 2006, Rainbow trout and Brown trout (Brown trout spawn in late fall) are present in the Yellowstone River to about the mouth of the Bighorn River. This information will be considered when determining ammonia standards for the facility. Degradation that will impact established beneficial uses are not allowed.

The United States Geological Service (USGS) collects flow and other data for the Yellowstone River at gauging station number 06214500 located on the right bank of the river 0.3 miles downstream from the U.S. Highway 87 bridge. The bridge is located about ¼ mile upstream from the City of Billings Sewage Treatment Plant. The 7Q10 flow at this station is 1,110 cubic feet per second (cfs). This USGS station is about 43 miles upstream from the Custer lagoon.

The Custer lagoon discharges to the Yellowstone River about five miles upstream from the mouth of the Bighorn River (Hydrologic Unit 10070007; Segment MT43Q001-1). This segment of the Yellowstone river is on the 1996 Total Maximum Daily Load (TMDL) impaired stream list for salinity/TDS/chlorides, suspended solids and unionized ammonia. The probable sources of impairment are agriculture, industrial point sources, irrigated crop production, municipal point sources and natural sources. The Yellowstone River at Custer is not on the 2004 303(d) list of impaired streams.

Baseline USGS water quality data for temperature, pH and ammonia in the Yellowstone River for the period January 5, 2000 through August 23, 2005 are in Appendix I. This data was used to calculate water quality standards for ammonia in Appendix II.

C. Applicable Water Quality Standards

Discharges to surface waters classified B-3 are subject to the specific water quality standards of ARM 17.30.625 (March 31, 2006), Department Circular DEQ-7 (February 2006), as well as the general provision of ARM 17.30.635 through 637. In addition to these standards, dischargers are also subject to ARM 17.30 Subchapter 5 (Mixing Zones, November 2004) and Subchapter 7 (Nondegradation of Water Quality, June 30, 2004).

ARM 17.30.635(4) requires that the design condition for disposal systems must be based on the 7-day average flow of the receiving water which is expected to occur on average once in 10-years (7Q10). More restrictive requirements may be necessary due to specific mixing zone requirements.

D. Mixing Zone

A mixing zone is an area where the effluent mixes with the receiving water and certain water quality standards may be exceeded [ARM 17.30.502(6)]. The Department must determine the applicability of currently granted mixing zones [ARM 17.30.505(1)]. Mixing zones allowed under a permit issued prior to April 29, 1993 will remain in effect unless there is evidence that previously allowed mixing zones will impair existing or anticipated uses [ARM 17.30.505(1)(c)].

In accordance with ARM 17.30.507(1)(b), acute water quality standards for aquatic life may not be exceeded in any portion of the mixing zone unless the Department finds that allowing minimal initial dilution will not threaten or impair existing uses. The discharge

must also comply with the general prohibitions of ARM 17.30.637(1) which require that state waters, including mixing zones, must be free from substances which will:

(a) settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines;
(b) create floating debris, scum, a visible oil film (or be present in concentrations at or in excess of 10 milligrams per liter) or globules of grease or other floating materials;
(c) produce odors, colors or other conditions as to which create a nuisance or render undesirable tastes to fish flesh or make fish inedible;
(d) create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life; and
(e) create conditions which produce undesirable aquatic life.

Although certain standards may be exceeded in the mixing zone, an effluent in its mixing zone may not block passage of aquatic organisms nor may it cause acutely toxic conditions [ARM 17.30.602(16)]. No mixing zone will be granted that will impair beneficial uses [ARM 17.30.506(1)]. Acute standards may not be exceeded in any part of the mixing zone [ARM 17.30.507(1)(b)]. Aquatic life chronic, aquatic life acute and human health standards may not be exceeded outside of the mixing zone [ARM 17.30.507(1)(a)].

A standard mixing zone may be granted for facilities which discharge less than 1 million gallons per day (MGD) or when mixing is nearly instantaneous [ARM 17.30.516(1)(d)]. Nearly instantaneous mixing is assumed if the discharge is through an effluent diffuser, when the mean daily flow exceeds the 7-day, 10-year low flow (dilution ratio <1) or the permittee demonstrates through a Department approved study plan that the discharge is nearly instantaneous. A nearly instantaneous mixing zone may not extend downstream more than two (2) river widths. Effluent discharges which do not qualify for a standard mixing zone mixing zone must apply for a source specific mixing zone in accordance with ARM 17.30.518 and must conform to the requirements of 75-5-301(4), MCA which states that mixing zones must be the smallest practicable size; have minimal effects on uses; and, have definable boundaries. ARM 17.30.515(2) states that a person applying for a mixing zone must indicate the type of mixing zone and provide sufficient detail for the Department to make a determination regarding the authorization of the mixing zone under the rules of Subchapter 5.

The applicant has requested a standard mixing zone. Facilities that discharge a mean annual flow of less than 1 MGD to a stream segment with a dilution ratio greater than or equal to 100:1 qualify for a standard mixing zone [ARM 17.30.516(3)(a)]. The dilution ratio for the Custer lagoon is 1,110 cfs/0.043 cfs or 25,814:1. Therefore, the chronic effluent limitations for the lagoon will be based on dilution with the 7Q10. The stream width at the proposed discharge location is approximately 500 feet. The standard mixing zone will extend 5,000 feet downstream [ARM 17. 30.516(3)].

However, estimated ammonia concentrations in Table 2 (actual values are unknown and may be higher or lower) exceed the acute water quality standard in Appendix II and there is no data or mixing zone study to demonstrate the proposed discharge structure will provide adequate mixing of the effluent with the receiving water. In fact, the discharge pipe at the bank would create a shore-hugging plume in which acute toxicity may be present. As stated above, acute water quality standards may not be exceeded in any portion of the mixing zone. Therefore, to ensure acute toxicity does not occur in the mixing zone, the permittee must install an effluent diffuser in the receiving water. The diffuser design should be submitted to the Department for review and approval before construction begins (see Part VII).

E. Basis and Proposed Water Quality-Based Effluent Limitations

Pollutants typically present in municipal wastewater that may cause or contribute to a violation of water quality standards include conventional pollutants such as biological material (measured by BOD_5), suspended solids, oil & grease, *E. coli* bacteria and pH; nonconventional pollutants such as chlorine, ammonia, nitrogen and phosphorus; and toxics such as metals and organic compounds**.**

Effluent limitations are required for all pollutants which demonstrate a reasonable potential to exceed numeric or narrative standards. The Department uses a mass balance equation to determine reasonable potential based on *EPA Technical Support Document for Water Quality based Toxics Control (TSD) (EPA/505/2-90-001)* Input parameters are based on receiving water concentration, maximum projected effluent concentration, design flow of the wastewater treatment facility, and the applicable receiving water flow.

1. Conventional Pollutants

The facility will provide a significant reduction in biological material and solids through secondary treatment (Section III). No additional WQBEL will be required for these parameters (BOD_5, TSS and pH).

Oil and grease - The oil and grease instantaneous maximum limit is 10 mg/L and no visible oil film is allowed [ARM 17.30.637(1)(b)].

Escherichia coli - Montana water quality standards were revised to replace fecal coliform bacteria with *Escherichia coli (E. coli*) to reflect the latest federal guidance. Applicable standards for *E. coli* are:

> April 1 through October 31 of each year - the geometric mean number of *E. coli* must not exceed 126 colony forming units (cfu) per 100 milliliters (mL) and 10% of the total samples may not exceed 252 cfu per 100 mL during any 30-day period [ARM 17.30.625(2)(a)(i)]; and

November 1 through March 31 of each year - the geometric mean number of *E. coli* must not exceed 630 cfu per 100 mL and 10% of the total samples may not exceed 1,260 cfu per 100 mL during any 30-day period [ARM 17.30.625(2)(a)(ii)].

2. Non-conventional Pollutants

Total Residual Chlorine (TRC) - The facility is proposing to use UV disinfection so no chlorine limit is necessary.

Ammonia - The surface water quality standards for ammonia are pH and temperature dependent. USGS data in Appendix I show the 75th percentile for background ammonia in the Yellowstone River at USGS gauging station 06214500 is 0.04 mg/L. Based on ambient conditions of the receiving water in Appendix I applicable water quality standards for the Yellowstone River are listed in Appendix II.

A Reasonable Potential (RP) analysis was completed to determine if there is a potential for the effluent to exceed ammonia standards in Appendix II. A RP was completed using the mass balance equation (Equation 1).

$$C_r = \frac{Q_e C_e + Q_s C_s}{Q_r} \qquad \text{Equation 1}$$

C_r = downstream receiving water concentration
C_e = effluent concentration = 15 mg/L;
Q_e = maximum design flow = 0.043 cfs;
Q_s = 7Q10 = 1,110 cfs; and
C_s = NH_3 concentration = 0.04 mg/L.

Using Equation 1 and estimated ammonia data in Table 2 there is no reasonable potential to exceed the chronic water quality standards in Appendix II for ammonia. However, based on the ammonia concentration in Table 2 the discharge will exceed the acute water quality standard for ammonia in the mixing zone (Appendix II).

3. Toxic Pollutants

Whole Effluent Toxicity (WET), metals and organic effluent limitations will not be required to be monitored in this permit due to the absence of significant industrial contributors to the system.

V. Final Effluent Limitations

A. Final effluent limitations for Outfall 001

Table 5. Final Effluent Limitations – Outfall 001

Parameter	Units	Average Monthly Limit[1]	Average Weekly Limit[1]	Maximum Daily Limit [1]
Biological Oxygen Demand (BOD_5)	mg/L	30	45	--
	lbs/day	7.0	10.5	--
Total Suspended Solids (TSS)	mg/L	30	45	--
	lbs/day	7.0	10.5	--
E. coli Bacteria[2]	cfu/100 mL	126	--	252
E. coli Bacteria [3]	cfu/100 mL	630	--	1260

Footnotes:
1. See Definition section at end of permit for explanation of terms.
2. This limit applies during the period April 1 through October 31.
3. This limit applies during the period November 1 through March 31.

Effluent pH shall remain between 6.0 and 9.0 unless a variation is due to natural biological processes. For compliance purposes, any single analysis and/or measurement beyond this limitation shall be considered a violation of the conditions of this permit.

85 Percent (%) Removal Requirement for BOD_5:
The arithmetic mean of the BOD_5 for effluent samples collected in a period of 30 consecutive days shall not exceed 15% of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85% removal). This is in addition to the concentration limitations on BOD_5.

85 Percent (%) Removal Requirement for TSS:
The arithmetic mean of the TSS for effluent samples collected in a period of 30 consecutive days shall not exceed 15% of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85% removal). This is in addition to the concentration limitations on TSS.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

There shall be no discharge which causes visible oil sheen in the receiving stream.

VI. Monitoring Requirements for Outfall 001

A. Influent and Effluent Monitoring Requirements

Monitoring Requirements				
Parameter	Unit	Sample Location	Sample Frequency	Sample Type[1]
Flow	MGD	Effluent	1/Week	Instantaneous
5-Day Biological Oxygen Demand (BOD_5)	mg/L	Influent	1/Month	Grab
	mg/L	Effluent	1/Month	Grab
	% Removal[4]	NA	1/Quarter	Calculated
	lbs/day	Effluent	1/Month	Grab
Total Suspended Solids (TSS)	mg/L	Influent	1/Month	Grab
	mg/L	Effluent	1/Month	Grab
	% Removal[4]	NA	1/Quarter	Calculated
	lbs/day	Effluent	1/Month	Calculated
pH	s.u.	Effluent	1/Month	Instantaneous
Temperature	°C	Effluent	1/Month	Instantaneous
E. Coli	cfu/100mL	Effluent	1/Month	Grab
Total Residual Chlorine[2]	mg/L	NA	NA	NA
Total Ammonia as N	mg/L	Effluent	1/Month	Grab
Nitrate + Nitrite as N	mg/L	Effluent	1/Quarter	Grab
Total Kjeldahl Nitrogen as N	mg/L	Effluent	1/Quarter	Grab
Total Nitrogen as N[3]	mg/L	NA	1/Quarter	Calculated
	lbs/day	NA	1/Quarter	Calculated
Total Phosphorus as P	mg/L	Effluent	1/Quarter	Grab
	lbs/day	NA	1/Quarter	Calculated

Footnotes:
1 See Definition section at end of permit for explanation of terms.
2. The Permittee is only required to sample for total residual chlorine if chlorine is used as a disinfectant in the treatment process. If chlorine is *not* used, write "NA" on the DMR for this parameter.
3. Calculated as the sum of Nitrate + Nitrite, as N, and Total Kjeldahl Nitrogen, as N, concentration.
4. Percent (%) Removal shall be calculated using the monthly average values.

B. Additional Reporting Requirements

Load and percent removal calculations are required. Standard language with examples of load calculations and percent removal calculations will be included in the permit.

VII . Special conditions/Compliance Schedule

Submit effluent diffuser engineering plans and specifications for Department review and approval by June 31, 2007.

VIII. Other Information

On September 21, 2000, a U.S. District Judge issued an order stating that until all necessary total maximum daily loads (TMDLs) under Section 303(d) of the Clean Water Act are established for a particular water quality limited segment (WQLS), the State is not to issue any new or increased permits under the MPDES program. The order was issued in the lawsuit Friends of the Wild Swan v. U.S. EPA, et al. (CV 97-35-M-DWM), District of Montana and Missoula Division.

The DEQ finds that renewal of this permit does not conflict with Judge Molloy's Order (CV 97-35-M-DVM) because: 1) it is not a new permit; 2) the actual load for $BOD_{5,}$ TSS, nitrogen and phosphorus will not exceed the allocated load and the permit is in compliance with the provisions of 75-5-303 MCA; and, 3) minimum treatment requirements are met.

IX. Information Sources

ARM Title 17, Chapter 30, Subchapter 5 - Mixing Zones in Surface and Ground Water**.** November 2004.

ARM Title 17, Chapter 30, Subchapter 6 - Surface Water Quality Standards. March 31, 2006.

ARM Title 17, Chapter 30, Subchapter 7 - Nondegradation of Water Quality. June 30, 2004.

ARM Title 17, Chapter 30, Subchapter 13 - Montana Pollutant Discharge Elimination System (MPDES) Standards. March 31, 2003.

40 CFR, Parts 122, 133, 136, July 1, 2004.

DEQ. Circular DEQ 2, Design Standards for Wastewater Facilities. 1999.

DEQ. Circular WQB-7, Montana Numeric Water Quality Standards. February 2006.

DEQ. Montana List of Water bodies in Need of Total Maximum Daily Load Development. 1996.

DEQ. Montana 303(d) List. A Compilation of Impaired and Threatened Water bodies in Need of Water Quality Restoration. Part A. Water Quality Assessment Results. November 24, 2004.

EPA. Office of Water, U.S. EPA NPDES Permit Writers' Manual, EPA-833-B-96-003. December 1996.

Prepared by: John Wadhams Date: October 12, 2006

Appendix I. Water quality parameters for determination of ammonia standards for the Yellowstone River (USGS Station 06214500) January 5, 2000 through August 23, 2005.

Parameter (season/unit)	Number of Samples	Average	Minimum	Maximum	75th percentile
Temperature (ºC) Annual	53	10.9	0	24.9	17.5
Temperature (ºC) April-Oct	36	15.2	3	24.9	19.3
Temperature (ºC) Nov-March	17	1.7	0	7.5	1.1
pH (s.u.) Annual	24	8.2	7.5	8.8	8.6
pH (s.u.) April-Oct	16	8.2	7.5	8.8	8.4
pH (s.u.) Nov-March	8	8.1	7.7	8.2	8.1
Ammonia (mg/L) Annual	24	0.03	0.02	0.04	0.04

[1] Based on 95th percentile of annual data.

Appendix II. Applicable Ammonia Water Quality Standards for Receiving Water

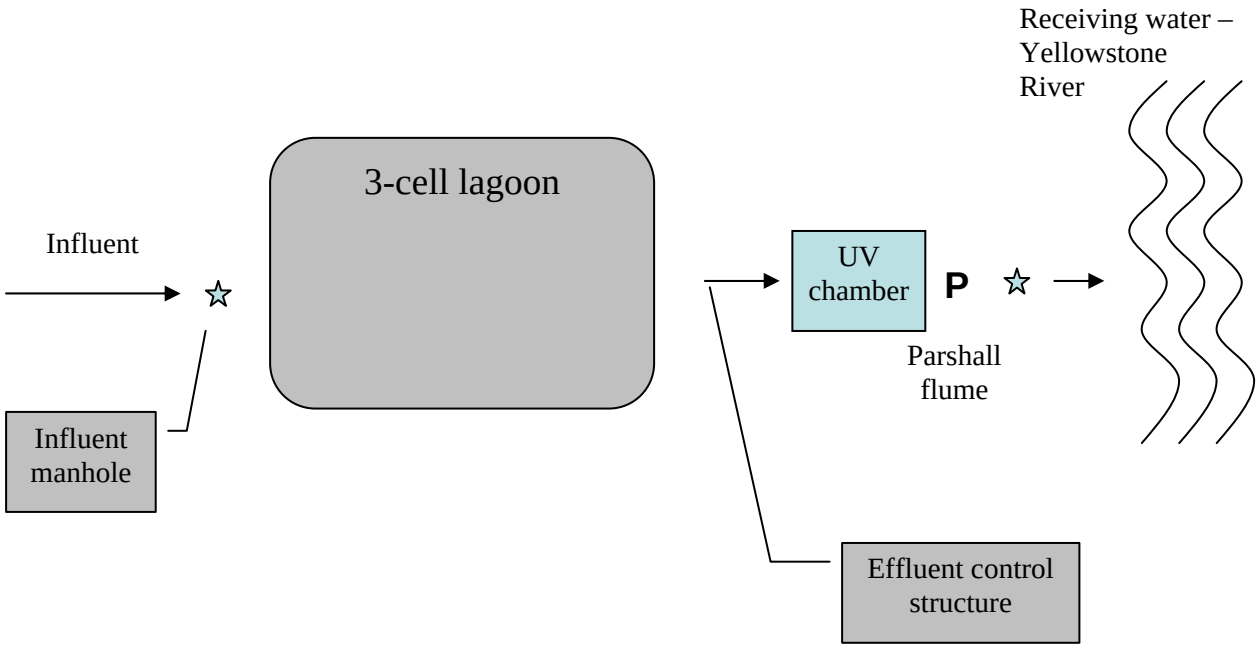
Condition	Period (1)	Salmonids Present	Early Life Stages Present	Ambient Condition		Water Quality Standard (4)
				pH	Temperature °C	
Acute	Annual	Yes	NA	8.6 (2)	17.3	1.77
Chronic	Summer	Yes	Yes	8.4(3)	19.3(3)	1.00
Chronic	Winter	Yes	Yes	8.1(3)	1.1(3)	2.10

NA – Not Applicable

Footnotes:

1. Winter period is taken to be November 1 to March 30; Summer period is taken to be April 1 to October 30.
2. Based on 95 percentile of annual data.
3. Based on 75th percentile of values in the applicable period.
4. Based on Department Circular DEQ-7 (February 2006).

Figure 1



☆ Sample locations